

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/500,854	MCOWAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	EDWARD PARK	2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendments and remarks received on 8/20/10.
2. ☒ The allowed claim(s) is/are 1-32, 38-39, 42-44, 47-58 (to be re-numbered as 1-49).
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date <u>20100826</u> .</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____.</li> </ol> |
|---|---|

/Edward Park/  
Examiner, Art Unit 2624



## **EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/20/10 has been entered.

### **EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Han Gim (Reg #: 62,953) on 8/26/10.

The application has been amended as follows:

1. (Currently Amended) A system for authenticating a user's signature, the system comprising:

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first extraction means for extracting first angle data and first distance data relating to different parts of the user's signature to obtain a signature trace;

normalization means for generating a normalized signature trace by determining a plurality of temporally equidistant points on the signature trace such that ~~to~~ an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time;

second extraction means for extracting second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized;

registration means for storing a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature;

comparison means for comparing the data extracted by the second extraction means during an authentication phase to the reference angle data and the reference distance data stored in the reference data file, according to predefined verification criteria; and

verification means for generating an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on said comparing;

wherein the second extractions means is implemented in a computing device.

2. (Previously presented) The system according to claim 1, wherein the second extraction means is adapted to extract data relating to a plurality of different points of the user's signature including data relating some of said points to other points in the user's signature.

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3. (Previously presented) The system according to claim 2, wherein the second extraction means is adapted to extract data relating to a plurality of different points of the user's signature including data relating each of a number of said points to an immediately preceding point in the user's signature.

4. (Previously presented) The system according to claim 2, wherein the second extraction means is adapted to extract data relating to a plurality of different points of the user's signature including data relating a last point to a first point in the user's signature.

5. (Previously presented) The system according to claim 1, wherein the second extraction means includes angle extraction means for extracting angle data concerning the relative angular positions of a plurality of points of the user's signature.

6. (Previously presented) The system according to claim 1, wherein the second extraction means includes distance extraction means for extracting distance data concerning the relative distances apart of a plurality of points of the user's signature.

7. (Previously presented) The system according to claim 1, wherein the second extraction means includes timing extraction means for extracting timing data indicative of the relative times between execution of different parts of the user's signature, and the comparison means is adapted to compare the extracted timing data with reference timing data in the reference data file.

8. (Previously presented) The system according to claim 1, further comprising password verification means for verifying a user password.

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9. (Previously presented) The system according to claim 8, further comprising timing verification means for verifying that the password is input in accordance with a predetermined timing.
10. (Previously presented) The system according to claim 9, wherein the timing verification means includes means for verifying a plurality of hold times for which the relevant keys of the keyboard input device are depressed during input of the password, and means for verifying a plurality of latency times between a release of one key and a depression of a following key during use of the keyboard input device to enter the password.
11. (Previously presented) The system according to claim 1, further comprising user name input means for receiving a user name.
12. (Previously presented) The system according to claim 1, wherein the comparison means incorporates at least one neural network for determining the predefined verification criteria.
13. (Previously presented) The system according to claim 1, wherein the second extraction means is adapted to extract data relating to different features of the user's signature selected according to a fitness of such features to discriminate the user's signature for the purposes of verification and determined by a fitness function relating a relative fitness of the features to their form and number.
14. (Previously presented) The system according to claim 13, wherein the fitness function is optimized by an optimization algorithm.

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15. (Previously presented) The system according to claim 1, further comprising training means for training the system to refine the predefined verification criteria using angle and distance data relating to a plurality of samples of the user's signature inputted into the system by the user during the registration phase and generated false samples.

16. (Previously presented) The system according to claim 1, wherein the verification means is adapted to provide an output indicative of a non-match.

17. (Currently Amended) A method for authenticating a user's signature, comprising:

extracting, by a computing device, first angle data and first distance data relating to different parts of the user's signature inputted into the system by a manual input device to obtain a signature trace;

normalizing, by the computing device, the signature trace to generate a plurality of temporally equidistant points on the signature trace such that an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time;

~~using a computing device,~~ extracting, by the computing device, second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized;

creating a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature;

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comparing, by the computing device, the data relating to different parts of the normalized signature trace during an authentication phase to the reference angle and the reference distance data stored in the reference data file, according to predefined verification criteria; and generating an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on said comparing.

18. (Previously presented) The method of claim 17, wherein said extracting said first angle data and first distance data comprises extracting data relating to a plurality of different points of the user's signature including data relating some of said points to other points in the user's signature.

19. (Previously presented) The method of claim 18, wherein said extracting said first angle data and first distance data comprises extracting data relating to a plurality of different points of the user's signature including data relating each of a number of said points to an immediately preceding point in the user's signature.

20. (Previously presented) The method according to claim 18, wherein extracting said first angle data and first distance data comprises extracting data relating to a plurality of different points of the user's signature including data relating a last point to a first point in the user's signature.

21. (Previously presented) The method of claim 17, wherein extracting said first angle data and first distance data includes extracting angle data concerning the relative angular positions of a plurality of points of the user's signature.



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22. (Previously presented) The method of claim 17, wherein extracting said first angle data and first distance data includes extracting distance data concerning the relative distances apart of a plurality of points of the user's signature.

23. (Previously presented) The method of claim 17, wherein extracting said first angle data and first distance data includes extracting timing data indicative of the relative times between execution of different parts of the user's signature, and said comparing further comprises comparing the extracted timing data with reference timing data in the reference data file.

24. (Previously presented) The method of claim 17, further comprising verifying a password.

25. (Previously presented) The method of claim 24, further comprising verifying the password using a predefined timing

26. (Previously presented) The method of claim 25, wherein verifying the input further comprises:

verifying a plurality of hold times for which the relevant keys of the keyboard input device are depressed during input of the password; and

verifying a plurality of latency times between the release of one key and the depression of the following key during use of the keyboard input device to enter the password.

27. (Previously presented) The method of claim 17, further comprising receiving a user name and using the user name to identify a reference data file.

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28. (Previously presented) The method of claim 17, wherein said comparing the angle and distance data incorporates at least one neural network for determining the predetermined verification criteria.

29. (Previously presented) The method of claim 17, wherein said extracting said first angle data and said first distance data further comprises extracting data relating to different features of the user's signature selected according to the fitness of such features to discriminate the user's signature for the purposes of verification and determined by a fitness function relating the relative fitness of the features to their form and number.

30. (Previously presented) The method of claim 29, wherein the fitness function is optimized by an optimization algorithm.

31. (Previously presented) The method of claim 17, further comprising training to refine the predefined verification criteria on the basis of angle and distance data relating to a plurality of samples of the user's signature inputted by the user during the registration phase and generated false samples.

32. (Previously presented) The method of claim 17, wherein said generating further comprises generating an output indicative of a non-match.

33. (Cancelled).

34. (Cancelled).

35. (Cancelled).

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36. (Cancelled).

37. (Cancelled).

38. (Currently Amended) A non-transitory computer-readable storage medium having computer-readable instructions stored thereon for authenticating a user's signature, the computer-readable instructions comprising:

instructions for extracting first angle data and first distance data relating to different parts of a user's signature to obtain a signature trace;

instructions for normalizing the signature trace to generate a plurality of temporally equidistant points on the signature trace such that ~~to~~ an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time; and

instructions for extracting second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized;

instructions for storing a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature;

instructions for comparing the data relating to different parts of the normalized signature trace during an authentication phase to the reference angle and the reference distance data stored in the reference data file, according to predefined verification criteria; and

instructions for generating an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on said comparing.

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39. (Currently Amended) The non-transitory computer-readable storage medium of claim

38, further comprising:

~~instructions for storing a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature inputted using a manual input device during a registration phase; wherein the plurality of samples of the user's signature are normalized based upon a time to obtain a plurality of normalized samples.~~

40. (Cancelled).

41. (Cancelled).

42. (Previously presented) The non-transitory computer-readable storage medium of claim

39, further comprising:

instructions for training to refine the predefined verification criteria by which a match is to be judged on the basis of angle and distance data relating to a plurality of samples of the user's signature during the registration phase and generated false samples.

43. (Currently Amended) A system for authenticating a user's signature, the system comprising:

an input apparatus, wherein the input apparatus is configured to provide an output indicative of the location of the input apparatus with respect to time when the input apparatus is manipulated;

a computing apparatus, wherein the computing apparatus is configured to:

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extract first angle data and first distance data relating to different parts of a user's signature output by the input apparatus to obtain a signature trace;

normalize the signature trace to generate a plurality of temporally equidistant points on the signature trace such that ~~to~~ an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time; ~~and~~

extract second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized;

store a reference data file comprising reference angle data and reference distance data relating to a plurality of samples of the user's signature, wherein the plurality of samples of the user's signature are normalized based upon a time to obtain a plurality of normalized samples;

a comparator apparatus configured to compare the data relating to different parts of the normalized signature trace during an authentication phase the reference angle and the reference distance data held in the reference data file, according to predefined verification criteria; and

an output apparatus configured to provide an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on the result of the comparison.

44. (Currently Amended) The system of claim 43, ~~further comprising:~~

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~~a reference data file comprising reference angle data and reference distance data relating to a plurality of samples of the user's signature inputted using a manual input device during a registration phase,~~ wherein the plurality of samples of the user's signature are normalized based upon a time to obtain a plurality of normalized samples.

45. (Cancelled).

46. (Cancelled).

47. (Previously Presented) The system of claim 44, further comprising:

a trainer configured to refine the predefined verification criteria by which a match is to be judged on the basis of angle and distance data relating to a plurality of samples of the user's signature during the registration phase and generated false samples.

48. (Currently Amended) A method of verifying a user's signature, comprising:

~~using a computing device, comparing, by a computing device,~~ data derived from at least one vector from an input signature received from a manual input device during an authentication phase to reference angle data and reference distance data, according to predefined verification criteria, wherein the data derived from said at least one vector comprises data relating to different parts of a normalized signature trace, wherein an arc length and total time of the signature trace are normalized to unit measurements to generate a plurality of temporally equidistant points on the signature trace, and wherein the reference angle data and reference distance data is obtained from a reference data file comprising data relating to a plurality of samples of the user's signature, wherein the plurality of samples of the user's signature are normalized based upon a

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time to obtain a plurality of normalized samples and selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized; and

~~providing~~ generating an output indicative of a match between the data derived from said at least one vector and the reference angle data and reference distance data.

49. (Previously presented) The method of claim 48, wherein the data derived from said least one vector relates to different features of the user's signature selected according to the fitness of such features to discriminate the user's signature for the purposes of verification and determined by a fitness function relating the relative fitness of the features to their form and number.

50. (Previously presented) The method of claim 49, wherein the fitness function is optimized by an optimization algorithm.

51. (Previously presented) The method of claim 48, further comprising:  
training to refine verification criteria by which said match is to determined.

52. (Previously presented) The method of claim 48, further comprising verifying an input of a required password, as determined by a reference password.

53. (Previously presented) The method of claim 52, further comprising verifying the input of the password with a required timing, as determined by a reference timing.

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54. (Previously presented) The method of claim 53, wherein verifying the input further comprises:

verifying a plurality of hold times for which relevant keys of ~~the keyboard~~ an input device are depressed during input of the password; and

verifying a plurality of latency times between the release of one key and the depression of the following key during use of the ~~keyboard~~ input device to enter the password.

55. (Currently Amended) A method of verifying a signature, comprising:

receiving, from a manual input device, the signature;

extracting, by a computing device, first angle data and first distance data relating to different parts of the signature to obtain a signature trace;

normalizing, by the computing device, the signature trace to generate a plurality of temporally equidistant points on the signature trace such that an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time;

~~using a computing device,~~ extracting, by the computing device, second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from different users is maximized;

storing a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature input during a registration phase;



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comparing, by the computing device, the data relating to different parts of the normalized signature trace during an authentication phase to the reference angle data and the reference distance data stored in the reference data file, according to defined verification criteria; and providing an output to the user indicative of a match between user's signature and the reference angle data and reference distance data in dependence on the result of said comparing.

56. (Previously presented) The method of claim 55, further comprising linearly time warping the signature trace so that the normalized signature trace contains a pre-determined number of temporally equidistant points.

57. (Previously presented) The system of claim 1, wherein the first extraction means extracts at least one vector to derive the angle data and distance data.

58. (Previously presented) The system according to claim 1, wherein the second extraction means is adapted to extract data according to a fitness determined by applying a genetic algorithm to pairs of said temporally equidistant points.

***Allowable Subject Matter***

3. Claims 1-32, 38-39, 42-44, 47-58 (to be re-numbered as 1-49) are allowed.

4. The following is an examiner's statement of reasons for allowance:

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Regarding claim 1, the most relevant prior art of record, Plamondon, Geiger, Hu combination, teaches first extraction means for extracting first angle data and first distance data relating to different parts of the user's signature to obtain a signature trace; normalization means for generating a normalized signature trace by determining a plurality of temporally equidistant points on the signature trace such that an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time (see Final Rejection on 5/25/10).

Applicant's claimed invention distinguishes over the Plamondon, Geiger, Hu combination by second extraction means for extracting second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized; registration means for storing a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature; comparison means for comparing the data extracted by the second extraction means during an authentication phase to the reference angle data and the reference distance data stored in the reference data file, according to predefined verification criteria; and verification means for generating an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on said comparing; wherein the second extractions means is implemented in a computing device.

Regarding claim 17, the most relevant prior art of record, Plamondon, Geiger, Hu combination, teaches extracting, by a computing device, first angle data and first distance data

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relating to different parts of the user's signature inputted into the system by a manual input device to obtain a signature trace; normalizing, by the computing device, the signature trace to generate a plurality of temporally equidistant points on the signature trace such that an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time (see Final Rejection on 5/25/10).

Applicant's claimed invention distinguishes over the Plamondon, Geiger, Hu combination by extracting, by the computing device, second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized; creating a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature; comparing, by the computing device, the data relating to different parts of the normalized signature trace during an authentication phase to the reference angle and the reference distance data stored in the reference data file, according to predefined verification criteria; and generating an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on said comparing.

Regarding claim 38, the most relevant prior art of record, Plamondon, Geiger, Hu combination, teaches instructions for extracting first angle data and first distance data relating to different parts of a user's signature to obtain a signature trace; instructions for normalizing the signature trace to generate a plurality of temporally equidistant points on the signature trace such that ~~to~~ an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time (see Final Rejection on 5/25/10).

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Applicant's claimed invention distinguishes over the Plamondon, Geiger, Hu combination by instructions for extracting second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized; instructions for storing a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature; instructions for comparing the data relating to different parts of the normalized signature trace during an authentication phase to the reference angle and the reference distance data stored in the reference data file, according to predefined verification criteria; and instructions for generating an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on said comparing.

Regarding claim 43, the most relevant prior art of record, Plamondon, Geiger, Hu combination, teaches an input apparatus, wherein the input apparatus is configured to provide an output indicative of the location of the input apparatus with respect to time when the input apparatus is manipulated; a computing apparatus, wherein the computing apparatus is configured to: extract first angle data and first distance data relating to different parts of a user's signature output by the input apparatus to obtain a signature trace; normalize the signature trace to generate a plurality of temporally equidistant points on the signature trace such that ~~to~~ an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time (see Final Rejection on 5/25/10).

Applicant's claimed invention distinguishes over the Plamondon, Geiger, Hu combination by extract second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized; store a reference data file comprising reference angle data and reference distance data relating to a plurality of samples of the user's signature, wherein the plurality of samples of the user's signature are normalized based upon a time to obtain a plurality of normalized samples; a comparator apparatus configured to compare the data relating to different parts of the normalized signature trace during an authentication phase the reference angle and the reference distance data held in the reference data file, according to predefined verification criteria; and an output apparatus configured to provide an output indicative of a match between the user's signature and the reference angle data and reference distance data in dependence on the result of the comparison.

Regarding claim 48, the most relevant prior art of record, Plamondon, Geiger, Hu combination, teaches comparing, by a computing device, data derived from at least one vector from an input signature received from a manual input device during an authentication phase to reference angle data and reference distance data, according to predefined verification criteria (see Final Rejection on 5/25/10).

Applicant's claimed invention distinguishes over the Plamondon, Geiger, Hu combination by wherein the data derived from said at least one vector comprises data relating to different parts of a normalized signature trace, wherein an arc length and total time of the signature trace are normalized to unit measurements to generate a plurality of temporally

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equidistant points on the signature trace, and wherein the reference angle data and reference distance data is obtained from a reference data file comprising data relating to a plurality of samples of the user's signature, wherein the plurality of samples of the user's signature are normalized based upon a time to obtain a plurality of normalized samples and selected such that variance between signatures from the user is minimized and variance between signatures from other users is maximized; and generating an output indicative of a match between the data derived from said at least one vector and the reference angle data and reference distance data.

Regarding claim 55, the most relevant prior art of record, Plamondon, Geiger, Hu combination, teaches receiving, from a manual input device, the signature; extracting, by a computing device, first angle data and first distance data relating to different parts of the signature to obtain a signature trace; normalizing, by the computing device, the signature trace to generate a plurality of temporally equidistant points on the signature trace such that an arc length of the signature trace is a unit measurement of length and a total time to produce the signature is a unit measurement of time (see Final Rejection on 5/25/10).

Applicant's claimed invention distinguishes over the Plamondon, Geiger, Hu combination by extracting, by the computing device, second angle data and second distance data relating to different parts of the normalized signature trace, wherein the second angle data and second distance data are selected such that variance between signatures from the user is minimized and variance between signatures from different users is maximized; storing a reference data file comprising reference angle data and reference distance data extracted from a plurality of samples of the user's signature input during a registration phase; comparing, by the computing device, the data relating to different parts of the normalized signature trace during an

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authentication phase to the reference angle data and the reference distance data stored in the reference data file, according to defined verification criteria; and providing an output to the user indicative of a match between user's signature and the reference angle data and reference distance data in dependence on the result of said comparing.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD PARK whose telephone number is (571)270-1576. The examiner can normally be reached on M-F 10:30 - 20:00, (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Edward Park  
Examiner  
Art Unit 2624

/Edward Park/  
Examiner, Art Unit 2624  
/Brian Q Le/  
Primary Examiner, Art Unit 2624